Early Achievements in Air Quality and Health

Satellite Air Quality Data

NASA
Goddard Spaceflight Center

Verification & Validation

In-situ networks

International AQ Monitoring

Data assimilation into models

Modeled Forecasts

GEOMON
European Union

Health Authorities

Asthma Hospitalizations

NASA-Helix
Marshall Spaceflight Ctr.

Dissemination

Global data relays

GEONETCast
(see below)

Global Village

Alerts

News Media
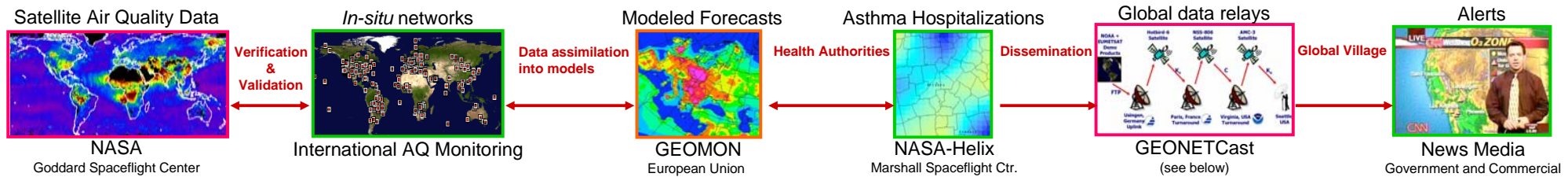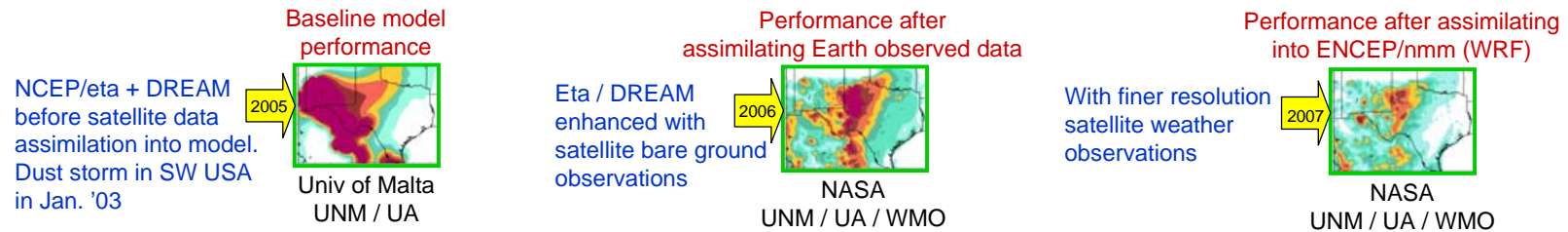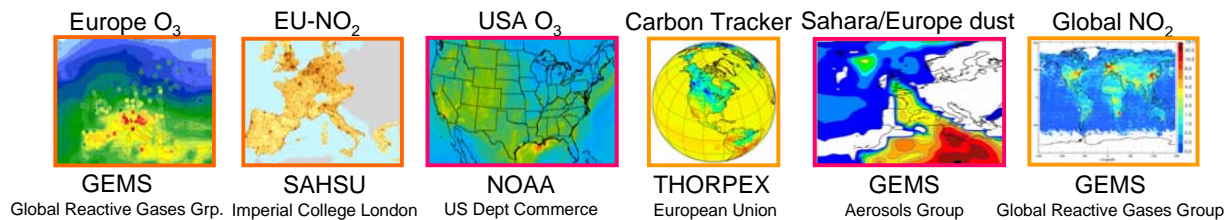Government and Commercial

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Progress in dust forecasting and early warning for populations at risk for cardiovascular and chronic respiratory diseases like asthma and myocardial infarction

Baseline model performance

NCEP/eta + DREAM before satellite data assimilation into model. Dust storm in SW USA in Jan. '03

2005

Univ of Malta
UNM / UA

Performance after assimilating Earth observed data

Eta / DREAM enhanced with satellite bare ground observations

2006

NASA
UNM / UA / WMO

Performance after assimilating into ENCEP/nmm (WRF)

With finer resolution satellite weather observations
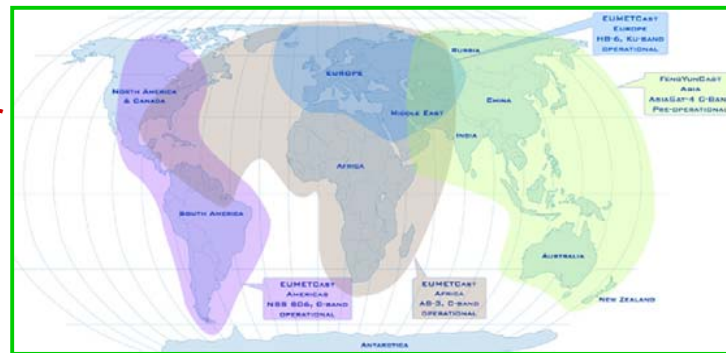

2007

NASA
UNM / UA / WMO

Examples of air quality and /health models based on geospatial techniques, satellite data assimilation techniques, and bio-statistical techniques from air quality centers and laboratories in the United States and European Union. These are all produced by GEO members and participating organizations to facilitate health decisions.
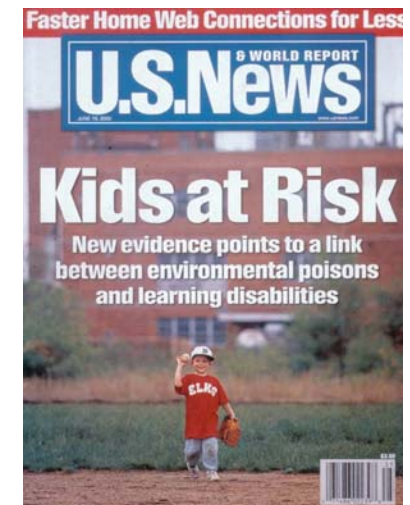
Europe O$_3$

GEMS
Global Reactive Gases Grp.

EU-NO$_2$

SAHSU
Imperial College London

USA O$_3$

NOAA
US Dept Commerce

Carbon Tracker

THORPEX
European Union

Sahara/Europe dust

GEMS
Aerosols Group

Global NO$_2$

GEMS
Global Reactive Gases Group

Orange boxes = emerging products;
Red boxes = developmental;
Green boxes = collaborations

Global weather services for health alerts

GEONETCast (EUMETSAT)

Faster Home Web Connections for Less

U.S. News & WORLD REPORT

Kids at Risk

New evidence points to a link between environmental poisons and learning disabilities